

KNN/Regularization (Q8L9)

52% (11/21)

✓ 1. The bias of an estimator (e.g. \hat{z}) equals...Hint: the OLS coefficients are unbiased :)

- ☒ A $E(\hat{z}) - z$
- ☐ B $E(\hat{z}^2) - [E(\hat{z})]^2$
- ☐ C $[E(\hat{z}^2) - E(\hat{z})]^2$
- ☐ D $E(\hat{z}^2)$
- ☐ E I do not know

✗ 2. The main idea of regularization is

- ☐ A To introduce a small amount of bias in order to have less variance.
- ☐ B To introduce a small amount of variance in order to have less bias.
- ☒ C To introduce a small amount of variance and bias in order to have less bias.
- ☐ D I do not know

✓ 3. How the tune of any parameter can be made

- ☒ A using Cross validation
- ☐ B It is impossible
- ☐ C I do not know
- ☐ D using larger sample
- ☐ E only having population

✗ 4. The ridge coefficient estimates shrink towards zero

- ☐ A when λ increases
- ☒ B when λ decreases
- ☐ C when $\lambda = 0$
- ☐ D I do not know

✗ 5. Which one can shrink the slope all the way to 0?

- ☐ A Lasso
- ☒ B Ridge
- ☐ C Regression
- ☐ D I do not know

✗ 6. When $\lambda = 0$, we have

- ☐ A Ridge
- ☒ B Lasso
- ☐ C EL
- ☐ D Regression
- ☐ E I do not know

✗ 7. When $\alpha = 0$, we have

- ☐ A Ridge
- ☒ B Lasso
- ☐ C EL
- ☐ D Regression
- ☐ E I do not know

✓ 8. Which function can help to perform cross-validation for regularization in R?

- ☒ A `cv.glmnet()`
- ☐ B `cros_val()`
- ☐ C `glmnet(method = "cv")`
- ☐ D I do not know

✓ 9. KNN is

- ☒ A Data-driven
- ☐ B Model-driven
- ☐ C I do not now

✓ 10. KNN is

- ☐ A parametric method
- ☒ B non-parametric method
- ☐ C I do not know

✓ 11. The dependent variable of the (OLS) regression is

- ☐ A categorical
- ☐ B ordinal
- ☒ C continuous
- ☐ D count
- ☐ E I do not know

- ✓ 12. The dependent variable of the classification is
- ☒ A categorical
 - ☐ B numeric
 - ☐ C I do not know
- ✓ 13. How to chose K?
- ☐ A pick own
 - ☒ B using cross-validation
 - ☐ C the largest one
 - ☐ D the smallest one
- ✓ 14. KNN can be used for regression
- ☒ A Yes
 - ☐ B No
 - ☐ C I do not know
- ✗ 15. In the case of KNN classification we use
- ☒ A average of outcomes
 - ☐ B majority voting scheme
 - ☐ C I do not know
- ✗ 16. Which of these errors will increase constantly by increasing k?
- ☐ A train error
 - ☒ B test error
 - ☐ C both
 - ☐ D I do not know
- ✗ 17. This function can be used to perform KNN in R
- ☐ A knn()
 - ☐ B k_nn()
 - ☒ C knnreg()
 - ☐ D knearneib()
 - ☐ E I do not know

✗ 18. With the increase of k , the decision boundary will be

- ☐ A simplified
- ☐ B more complex
- ☐ C I do not know
- ☒ D unchanged

✓ 19. The best k correspond to

- ☒ A the lowest point of test error
- ☐ B the lowest point of train error
- ☐ C the highest point of test error
- ☐ D I do not know

✗ 20. KNN algorithm is sensitive to outliers

- ☐ A True
- ☒ B False
- ☐ C I do not know

✓ 21. KNN

- ☒ A is a supervised learning algorithm.
- ☐ B is an unsupervised learning algorithm.
- ☐ C I do not know